

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/014078

Box No. I

Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-16 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-11 _____ received by this Authority on 10.05.2005 with letter of 04.05.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/4-4/4 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1-11</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-11</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
Reference is made to the following documents:			
D1: US 5 848 080 A			
D1: US 5 870 421 A			
<p>The subject matter of claim 1 is novel because neither document D1 nor document D2 discloses saturable absorber mirrors or mode locking. A laser having the features specified in claim 1 is not known from any of the other prior art documents.</p>			
<p>The following features of claim 1 are known from the prior art:</p>			
<p>High-repetition mode-locked ultrashort laser pulse system for generating femtosecond or picosecond pulses using the principle of pulse decoupling, having at least:</p>			
<ul style="list-style-type: none">- one amplifying laser medium,- one laser resonator with at least one resonator mirror and at least one pulse decoupling component;- one saturable absorber mirror; and			

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	<p>- one pump source, more particularly a laser diode source, for pumping the laser medium.</p> <p>The subject matter of claim 1 differs in that the pulse decoupling component is an electrooptical modulator.</p> <p>The problem solved by this distinguishing feature is that of providing a compact laser system which uses the principle of pulse decoupling to emit ultrashort (high-energy) pulses.</p> <p>None of the prior art documents disclose the combination of the above-mentioned features, nor do they provide any indication that these features could be used to solve the problem of interest. A person skilled in the art would not consider modifying the laser systems of D1 and D2 in order to solve the said problem. In particular, the gain medium in D1 is so large that the arrangement is not suitable as a solution to the problem of interest. The subject matter of claim 1 is therefore not only novel but also inventive.</p> <p>Claims 2 to 11 refer directly or indirectly back to claim 1 and are therefore also novel and inventive.</p>

Box No. VIII **Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The term "high-repetition" should have been clarified, as indicated in the applicant's letter of 4 May 2005 (page 2, third paragraph), by specifying the frequency ranges disclosed in the description (>10 kHz - page 4, lines 19 and 26).

The term "r-parameter" in claim 6 should have been clarified by stating equation 3, as disclosed on page 7 of the description. Currently the term "r-parameter" in claim 6 can only be understood in conjunction with the description, as it does not appear to be a clear and recognised term. The applicant is referred to the fifth paragraph on page 2 of the letter of 4 May 2005.